REMARKS/ARGUMENTS

Introduction:

No claims are amended, added, or canceled in this Paper. Claims 2, 3, 6-11, 18, 21, 44, 48, and 55-58 remain pending. (Claims 1, 4, 5, 12-17, 19, 20, 22-43, 45-47, 49-54, and 59-63 were previously canceled.) Applicants respectfully request reconsideration of the application.

35 USC 112, Second Paragraph:

Claims 2, 3, 6-11, 18, 21, 44, 48, and 55-58 were rejected under 35 USC 112, second paragraph as indefinite. The grounds for this rejection are that the corresponding structure for each of the means-plus-function claim elements is not disclosed or identified in the specification. Applicants respectfully traverse this rejection.

"The proper test for meeting the definiteness requirement is that the corresponding structure (or material or acts) of a means (or step)-plus-function limitation must be disclosed in the specification itself in a way that one skilled in the art will understand what structure (or material or acts) will perform the recited function." (MPEP 2181, pg. 2100-238.) Moreover, "[t]he disclosure of the structure (or material or acts) may be implicit or inherent in the specification if it would have been clear to those skilled in the art what structure (or material or acts) corresponds to the means (or step)-plus-function claim limitations." (MPEP 2181, pg. 2100-238.)

Corresponding structure disclosed in the specification of this application for each of the means-plus-function claim elements includes but is not necessarily limited to stored computer readable instructions and/or a computer programmed to perform all or part of processes disclosed and described in the specification and drawings. Flow charts illustrating such processes are provided in the drawings and described in the specification. Applicants note that a person of ordinary skill in the field would readily recognize that the processes illustrated by the disclosed flow charts can be implemented, for example, as a computer aided design or computer aided engineering system. (See, e.g., the Background section of the specification.)

The following table identifies processes or parts of processes illustrated in the drawings and described in the specification that correspond to means-plus-function elements of the claims. The identification of processes in the table is not meant to be exhaustive but is intended merely to show that structure is disclosed in the specification for each of the means-plus-function

elements. Thus, additional processes or parts of processes disclosed in the specification may also correspond to one or more of the means-plus-function elements.

Claim	Element	Structure*
2	means for receiving computer readable information representing a proposed physical layout of a routing space of an electronics system including locations of a first electronic component, a second electronic component, and obstacles within said proposed physical layout	element 12 of process of Figure 1
	means for creating an initial array of nodes within the proposed physical layout	element 42 of process of Figure 4
	means for adjusting within said proposed physical layout said initial array of nodes, said means for adjusting including locating a particular number of nodes between a pair of said obstacles, said particular number corresponding to a maximum number of traces that can pass between said obstacles, each of said nodes positioned between said pair of said obstacles representing a possible location of one of said traces that can pass between said obstacles	element 44 of process of Figure 4; or process of Figure 6; or process of Figure 7
	means for creating a computer generated representation of a trace within said proposed physical layout of said routing space that connects the first electronic component to the second electronic component and passes between said pair of obstacles by selecting a path through said adjusted array of nodes, said trace comprising said path	element 14 of process of Figure 1; or element 34 of process of Figure 3; or element 46 of process of Figure 4; or process of Figure 11; or process of Figure 13
3	means for determining said particular number of traces that may pass between said pair of obstacles	element 604 of Figure 6; or elements 702 and 704 of Figure 7
6	wherein said means for adjusting locates said particular number of nodes along a line segment between said pair of obstacles	process of Figure 7
8	wherein said means for adjusting adjusts a location of each of at least one of said nodes in accordance with a proximity of said node to an object in said routing space	process of Figure 9
9	means for linking said adjusted initial array of nodes	process of Figure 11; or process of Figure 13

Claim	Element	Structure*
10	wherein said means for linking creates a link between each node in said array and nodes within a predetermined proximity of said each node without crossing any of said links	process of Figure 11
18	means for receiving information representing a proposed physical layout of a routing space of an electronics system including locations of obstacles within said proposed physical layout	element 12 of process of Figure 1
	means for creating an initial array of nodes within said proposed physical layout of said routing space	element 42 of process of Figure 4
	means for applying forces to ones of said nodes, wherein a magnitude of one of said forces applied to one of said nodes is proportional to a proximity of said one of said nodes to one of said obstacles	element 902 of process of Figure 9
	means for moving within said proposed physical layout each of said ones of said nodes in accordance with said force applied to said one of said nodes	element 906 of process of Figure 9
	means for creating a computer generated representation of a trace within said proposed physical layout of said routing space by selecting a path through said adjusted array of nodes, said trace comprising said path	element 14 of process of Figure 1; or element 34 of process of Figure 3; or element 46 of process of Figure 4; or process of Figure 11; or process of Figure 13
21	wherein said means for applying applies a plurality of forces to one of said nodes, wherein a magnitude of each of said plurality of forces corresponds to a proximity of said node to one of said plurality of obstacles	element 902 of process of Figure 9
	said means for moving moves one of said nodes in accordance with a vector sum of said plurality of forces applied to said one of said nodes	element 906 of process of Figure 9
55	wherein said means for creating an initial array of nodes creates the initial array of nodes in a honeycombed pattern	element 42 of process of Figure 4
56	wherein said means for creating an initial array of nodes creates the initial array of nodes wherein a random location of at least one node is generated	element 42 of process of Figure 4
57	wherein said means for creating comprises means for selecting spacings of the initial array of nodes to form a honeycombed pattern	element 42 of process of Figure 4

Claim	Element	Structure*
58	wherein said means for creating comprises means for generating a random location for at least one node	element 42 of process of Figure 4

*The disclosed structure includes but is not necessarily limited to computer readable instructions and/or a computer programmed to perform the indicated process(es).

Double Patenting:

Claims 2 and 18 were rejected on the ground of non-statutory obvious-type double patenting in view of claims 1, 2, and 12 of US Patent No. 6,678,876. Once all other issues regarding patentability are resolved, Applicants will submit a terminal disclaimer.

Prior Art Rejection:

Claims 2, 3, 6-11, 18, 21, 44, 48, and 55-58 were rejected under 35 USC 103(a) as obvious in view of US Published Patent Application No. 2001/0038612 to Vaughn et al. and US Patent No. 6,385,758 to Kikuchi et al. Applicants respectfully traverse this rejection.

The PTO acknowledges that Vaughn fails to disclose "locating a particular number of nodes between a pair of said obstacles, said particular number corresponding to a maximum number of traces that can pass between said obstacles, each of said nodes positioned between said pair of said obstacles representing a possible location of one of said traces that can pass between said obstacles" as recited in independent claim 2. To make up for this deficiency in Vaughn, the PTO relies on Kikuchi.

Kikuchi does not, however, disclose "locating a particular number of nodes between a pair of said obstacles, said particular number corresponding to a maximum number of traces that can pass between said obstacles, each of said nodes positioned between said pair of said obstacles representing a possible location of one of said traces that can pass between said obstacles." Rather, Kikuchi appears merely to teach calculating a maximum distance a component terminal can be moved. In Figure 8, Kikuchi illustrates an example in which such a calculation is made for the upper circle in Figure 8. The calculation is made using the radius of the upper circle, the radius of the lower circle and the width of the routing zone. Utilizing the radii of the upper and lower circles and the width of the routing zone to determine a maximum distance the upper circle can be moved, however, does not make up for the missing teachings of

Vaughn. For example, utilizing the radii of the upper and lower circles and the width of the routing zone to determine a maximum distance the upper circle can be moved does not involve placing nodes between obstacles much less that the number of nodes between the obstacles represents the maximum number of traces that can pass between the obstacles. In fact, assuming that the upper circle and the lower circle in Figure 8 can be deemed obstacles, nothing in Kikuchi teaches placing a number of nodes between the upper circle and the lower circle in Figure 8 that represents the maximum number of traces that can pass between the upper circle and the lower circle. Rather, Kikuchi appears merely to reserve a routing zone with a particular width and then limits how close the upper circle can be moved to the routing zone. In other words, Kikuchi requires that the upper circle be kept a minimum distance from the routing zone. (See Figure 8 and col. 11, lines 20-54.)

Kikuchi thus does not make up for the acknowledged deficiency in Vaughn. Therefore, even if combined Vaughn and Kikuchi do not meet all of the features of independent claim 2. At least for this reason, claim 2 is patentable over Vaughn and Kikuchi.

Claims 3, 6-11, 44, 55, and 56 depend from claim 2 and, at least because of that dependency, are also patentable over Vaughn and Kikuchi.

With respect to independent claim 18, the PTO acknowledges that Vaughn does not disclose "means for applying forces to ones of said nodes, wherein a magnitude of one of said forces applied to one of said nodes is proportional to proximity of said one of said nodes to one of said obstacles" or "means for moving within said proposed physical layout each of said ones of said nodes in accordance with said force applied to said one of said nodes." To make up for this deficiency in Vaughn, the PTO again relies on Kikuchi.

Kikuchi does not, however, teach either "means for applying forces to ones of said nodes, wherein a magnitude of one of said forces applied to one of said nodes is proportional to proximity of said one of said nodes to one of said obstacles" or "means for moving within said proposed physical layout each of said ones of said nodes in accordance with said force applied to said one of said nodes." Rather, as discussed above, Kikuchi appears merely to calculate the maximum distance that one component terminal can be moved toward another component terminal. (See Kikuchi col. 5, lines 26-32.) In fact, col. 5, lines 26-32 of Kikuchi appears to be a summary of Kikuchi's method of calculating a maximum distance a component terminal can be moved as discussed above and disclosed in Kikuchi at col. 8, lines 20-54. Calculating the

maximum distance a component terminal can move toward another component terminal, however, does not make up for the missing teachings of Vaughn. For example, calculating the maximum distance that the upper circle in Figure 8 can move toward the lower circle does not involve assigning any force to the upper circle or the lower circle that is proportional to the proximity of the circles to each other much less moving the upper circle or the lower circle in accordance with such a force or forces. In fact, the PTO has not pointed to any teachings in Kikuchi that show how component terminals such as the upper and lower circles in Figure 8 are moved.

Kikuchi thus does not make up for the acknowledged deficiency in Vaughn. Therefore, even if combined Vaughn and Kikuchi do not meet all of the features of independent claim 18. At least for this reason, claim 18 is patentable over Vaughn and Kikuchi.

Claims 21, 48, 57, and 58 depend from claim 18 and, at least because of that dependency, are also patentable over Vaughn and Kikuchi.

Conclusion:

In view of the foregoing, Applicants submit that all of the claims are allowable and the application is in condition for allowance. If at any time the Examiner believes that a discussion with Applicants' attorney would be helpful, the Examiner is invited to contact the undersigned at (801) 426-2106.

Respectfully submitted,

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